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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,168	10/04/2004	Yoshinari Koyama	HEIW:039	6864
27890	7590	03/14/2006	EXAMINER	
STEPTOE & JOHNSON LLP 1330 CONNECTICUT AVENUE, N.W. WASHINGTON, DC 20036			BOYKIN, TERRESSA M	
			ART UNIT	PAPER NUMBER
			1711	
DATE MAILED: 03/14/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/510,168	Applicant(s) KOYAMA, YOSHINARI	
	Examiner Terressa M. Boykin	Art Unit 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-16, 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/05</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 17, the phrase "remote sealtype" renders the claim indefinite because when appended to an otherwise definite expression, the "type" so extends the scope of the expression as to render it objectionably indefinite. *Ex parte Copenhaver*, 109 USPQ 118 is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4637417 see abstract and cols. 1-3 ; or USP 6033896 cols. 1-5.

US 4637417 discloses the use of a submersible viscometer in the primary separation step of the hot water process for recovery of bitumen from tar sand.

The reference discloses a process for separating cells from a liquid media, a method of fermentation using such a separation, and an apparatus for conducting such a separation or for facilitating a cellular reaction.

The liquid may be brought into contact with the microbial polysaccharide(s) and the fibrous material through any arrangement. Such arrangements may include the use of a liquid container into which a matrix of the fibrous material is placed. As an alternative,

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the liquid may be brought into contact with the fibrous material by causing the liquid to flow through, within or over a fibrous matrix of the fibrous material. Either the liquid may be moved relative to the fibrous matrix, or vice versa, such as through a liquid flowing over or through the matrix or by having the fibrous matrix mounted on frames and swung or agitated within a container or within a flow of a liquid, etc. The liquid container may also be moved with respect to the liquid, such as through agitation or oscillation. In a preferred embodiment, especially for viscous liquids, the liquid may be brought into contact with the fibrous material by pumping or otherwise forcing the liquid through a fibrous matrix of the fibrous material. This may be done by passing the liquid through a rotating fibrous matrix of the fibrous material through application of centrifugal force, such as by placing the liquid in the interior of the fibrous matrix and spinning it so as to move the liquid from its interior to its outer surface, through application of centrifugal force.

The reference also includes an apparatus for facilitating a method for producing a cellular reaction product in a liquid, the apparatus comprising: (a) a matrix of a fibrous material having an interior and an outer surface, the fibrous material treated with at least one microbial polysaccharide and having adsorbed thereupon cells of an organism capable of converting the at least one substrate substance to the at least one reaction product; (b) a reaction vessel for holding the liquid; (c) a liquid transport device adapted to move the matrix of the fibrous material relative to the liquid, such as through agitation or oscillation, for example.

The apparatus of the present invention in all its embodiments may include fluid containment and/or conduction apparatus to allow the operator to cause (1) the liquid to flow through a fibrous matrix of the fibrous material, (2) pump the liquid through a matrix of the fibrous material, (3) agitate the liquid in a vessel containing a matrix of the fibrous material; (4) pass a matrix of the fibrous material through the liquid, (5) agitate a matrix of the fibrous material within the liquid and/or (6) force the liquid through a rotating matrix of the fibrous material through application of centrifugal force. Such apparatus may be supplied using liquid containment and/or conduction devices known in the art and which could be applied to bring about the desired result in accordance with the parameters of the specific separation or reaction to which the apparatus is to be applied. Examples may include arrangements of reaction vats, pumps and liquid conduits to contain the liquid and bring it into contact with the fibrous matrix.

The CPBR performance was studied under either liquid-continuous mode, where the fibrous bed was completely immersed in 5 L media, or gas-continuous mode, where 90% of the fibrous bed was exposed to air with only 2.5 L media in the fermentor vessel. The first study was conducted in liquid-continuous mode (5 L media) and 150 rpm rotational speed. The second study was also in the liquid-continuous mode, but at 350 rpm rotational speed, the highest rotational speed that could be used with the present equipment without causing severe vibration of the rotating shaft. The third study was conducted in gas-continuous mode (2.5 L media) and at 350 rpm.

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The quality of xanthan produced from each batch was also determined by measuring the apparent viscosity of the xanthan broth at a selected xanthan concentration of 18 g/L using a Brookfield viscometer.

The drained fibrous matrix was removed from the reactor and washed several times with water until almost all cells had been removed. The total volume of the washing water and its OD, as well as its dry weight, were measured and used to estimate the total amount of cells immobilized in the fibrous matrix

The relative viability of immobilized cells as compared to free cells was determined by a plate count method. Small pieces of fibrous samples were cut off from the fibrous matrix and placed in test tubes containing sterile water. The immobilized cells in the fibrous matrix were then washed off from the matrix by vortexing for about 3 minutes.

The **USP 6033896** reference includes a process for separating cells from a liquid media, a method of fermentation using such a separation, and an apparatus for conducting such a separation or for facilitating a cellular reaction.

The liquid may be brought into contact with the microbial polysaccharide(s) and the fibrous material through any arrangement. Such arrangements may include the use of a liquid container into which a matrix of the fibrous material is placed. As an alternative, the liquid may be brought into contact with the fibrous material by causing the liquid to flow through, within or over a fibrous matrix of the fibrous material. Either the liquid may be moved relative to the fibrous matrix, or vice versa, such as through a liquid flowing over or through the matrix or by having the fibrous matrix mounted on frames and swung or agitated within a container or within a flow of a liquid, etc. The liquid container may also be moved with respect to the liquid, such as through agitation or oscillation.

The cell density in the sample was determined immediately by measuring the optical density of the cell suspension. The sample was then frozen and stored for future analysis of glucose and xanthan concentrations. The quality of xanthan produced from each batch was also determined by measuring the apparent viscosity of the xanthan broth at a selected xanthan concentration of 18 g/L using a Brookfield viscometer.

Discussion:

It is first noted that the claim discloses *an* apparatus which may be used for *all* *polymers* and not just for producing a polyarylene sulfides as in the case of applicants' claim 17.

Thus, it first would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the apparatus as described with various other

polymers including the polyarylene sulfide as claimed.

Secondly, with regard to the references above, in each reference there is usage of a separation vessel of two phases *, washing liquid, vibrational process, viscometer or an oscillator. In each instance it is possible to detect the liquid level of the component desired. Further, as noted by the reference, since the claimed apparatus is also described in such broad terms, it is rendered obvious over other apparatus used for the separating other components. Consequently, the claimed invention cannot be deemed as unobvious and accordingly is unpatentable.

* Note that the term phase may also be interpreted to mean solid liquid gas which would include the cells or granules of the references.

Correspondence

Please note that the cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants may be referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Terressa Boykin whose telephone number is 571 272-1069. The examiner can normally be reached on Monday through Friday from 6:30am to 3:00pm.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. The general information number for listings of personnel is (571-272-1700).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tmb


Examiner Terressa Boykin

TERRESSA M. BOYKIN
PRIMARY EXAMINER